Challenges Healthcare Management Business: ISP Innovation SMEs with Technology Virtualization and Server Consolidation

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Abstract.
The adaptation and innovation of the healthcare business strategy during the pandemic and new normal is needed now, for Small and Medium Enterprises (SMEs) which are engaged in Internet Service Providers (ISP) especially in running their business in pandemic also face the future challenging. This study aims to prove that virtualization technology planning, virtualization technology adaptability, and server consolidation services have a positive effect on healthcare management and business, such as operational costs with an impact on more efficient of healthcare small and medium enterprises (SMEs) Internet Service Providers (ISPs) in Indonesia. The data were taken from distributing questionnaires to 77 company representative respondents with the positions of IT Manager, IT Supervisor, and CIO. Data were analyzed by SEM using Smart PLS. The results of the research obtained prove that the operational cost effectiveness of Data Center management is influenced by planning, adaptability, and application of virtualization technology for 5.0. SMES ISPs in Indonesia healthcare sector need to pay attention to new result of planning, adaptability, and implementation of server consolidation services as a determinant of operational and cost effectiveness related to business objectives and management in managing a Data Center in the pandemic, new normal and future challenges.

Keywords**:** *data center, healthcare technology, server consolidation services, small medium enterprises, virtualization*

I. INTRODUCTION

The development of the Small and Medium Enterprises (SMEs/SMB) business in its development over the last three years until pandemic year has experienced ups and downs, especially during the current pandemic and new normal, ideally every SMEs should have careful planning and good adaptability. There is a technology transition that makes companies need to evaluate the ability of the IT team continuously, for example through IT training, so that this can bring benefits by reducing operational costs and especially related to marketing in development. IT infrastructure related to customer service and service Indonesian SMEs ISP (Internet Service Providers) considers virtualization technology is not just a trend in the current era, but has tried to meet business needs in the internet service industry (ISP) where Indonesian SMEs ISPs, such as Cloud Computing, use virtualization technology through server consolidation services for support his business which is expected to

keep up with the times. So that when implementing virtualization technology results in an effective operational cost. Companies with a Small Medium Business (SMB) / Small Medium Enterprises (SMEs) / Data Association of Indonesian Internet Service Providers (APJII) in 2020, as many as 360 companies have been registered as companies engaged in internet service provider services or referred to as Internet Service Providers (ISP) and 60% of them are SMEs level ISPs, especially those related to the health business[1].

This research is aimed at SMEs-scale ISP companies in Indonesia, hereinafter referred to as 'ISP Healthcare UKM Indonesia'. To get the results of implementing virtualization technology that provides benefits for businesses, companies must make careful planning for this. Based on a survey conducted by McKinsey, more than ⅔ applications owned by the corporation will be virtualized or placed on cloud computing technology stated that the market for Cloud Computing services in 2019 reached 250 billion US dollars. Meanwhile, Vmware through its 2017 to 2019 summary report conducted a survey of 6,500 IT practitioners in Asia Pacific, stating that as many as 98% of IT practitioners in Indonesia have virtualized and made their plans. Based on this, virtualization technology is suitable to be applied if it is in line with business goals itself. The other provides a review that several companies, especially SMEs, consider the need for cloud computing to be relatively new. So that SMEs should not immediately adopt this service and replace the traditional Data Center or Data Center infrastructure to switch to Cloud Computing[2].

Even though there is an assumption that Cloud Computing services are the best solution in the pandemic, not all SMEs are comfortable with this new technology considering that each company has different needs, different levels and has different levels of comfort. There are three factors that cause an e-business service that currently stands on top of the Cloud Computing service infrastructure is not necessarily adopted and adapted by a company, namely a lack of trust among business users, lack of concern for business service users to the cost efficiency created by a service. IT and corporate data confidentiality. Likewise, if it is focused on virtualization technology, provides arguments about the value and implications of cloud computing services which are still in discussion on the business sustainability side. Virtualization technology will be very complicated and inefficient if the implementation of infrastructure and the use of management tools is not appropriate[3]. Research considers the adoption and adaptation of cloud computing services through virtualization technology is still relatively slow. Although 57% of respondents have developed server virtualization, the use of this technology is still limited to 1% to 29%. The cause of the slow development of virtualization technology is the difficulty in understanding the impact of virtualization on networks and users, concerns about the use of very critical

applications (for example ERP), the skills and knowledge of IT staff who are still lacking about virtualization technology, and there are still few examples of virtualization development at scale. large use of Cloud Computing services**.** Then, as many as 73% have used the Cloud Computing service without realizing the potential risk of using this service[4]. The top four potential risks are dependence on Cloud Computing providers so that there is a potential for a decrease in the level of security of sensitive data (20%), the need for accessible and high-speed internet (16%), difficulty making transitions / moving between Cloud Computing Providers (15, 63%) and the difficulty of conducting audits on Cloud Computing services (12.50%). To measured calculations, virtualization technology requires a large number of servers or the use of a number of servers above 10 units so that the benefits generated can be felt optimally, although adapting the Cloud Computing service can be done by renting this service to a third party and it does not require initial capital, SMEs are still hesitant in directly adopting it[5].

A cloud computing system known as virtualization technology is not just a technical IT improvement and can bring an organization to change. On the other hand, the company still considers and cares about security issues, the issue of ease of making system changes, the issue of reliability and the importance of data ownership and cost efficiency[6]. For some of these issues, the choice of building a Cloud Computing infrastructure by yourself is an inaccurate choice if Indonesian SMEs ISPs do not have a plan and do not have good adaptability to virtualization technology. So that the information gap makes this research very significant to determine whether the application of virtualization through server consolidation contributes to the effectiveness of the operational costs of the Indonesian SMEs ISP. From the literature study, the formulation of the problem is obtained as follows:

1. Does planning for virtualization technology affect server consolidation services?
2. Does the planning of virtualization technology affect the operational and marketing cost effectiveness of Indonesian SMEs ISPs?
3. Does the adaptability of virtualization technology affect server consolidation services?
4. Does the adaptability of virtualization technology affect the operational cost effectiveness of Indonesian SMEs ISPs?
5. Does the server consolidation service affect the operational and marketing cost effectiveness of Indonesian SMEs ISPs?

Research purposes

The purpose of this research is to conduct empirical studies in developing and testing models for the application of virtualization technology in SMEs using Structural Equation Modeling (SEM). Through this research, the writer wants to prove that the operational cost effectiveness of a Data Center owned by an SMEs ISP in Indonesia is influenced by Virtualization Technology Planning and Virtualization

Technology Adaptability, either directly or indirectly through the application of Server Consolidation Services[7]. Figure 1 below showed the problem discussion aspect is focused on Server Virtualization techniques with Server Consolidation Service coverage. IaaS is implemented using several virtualization techniques such as server virtualization, storage virtualization / storage virtualization, desktop / client virtualization / computer virtualization, network virtualization / network virtualization, application virtualization / application virtualization.

Cloud Computing Services Saas	Type Services	Samples Services
	Gmail, Google Doc, Finance, Collaboration, Communication, Business, CRM, ERP, HR	Zoho, Salesforce, Google Apps
Paas Time, Developer tools, Middleware	Web 2 application run time, Jave 2 run	Windows Azure, Aptana, Google Apps Engine Amazon web services, Dropbox, Akamai
Iaas Networking, Bandwidth	Servers, Storage, Processing Power	

Fig. 1. Cloud Computing in Healthcare Services

The Cloud Computing service model is to use a Service Oriented Architecture (SOA) in which there are different levels of models such as SaaS, PaaS and IaaS. In this study, Infrastructure as a Service (IaaS) is the scope of the discussion. From the following table, IaaS is considered as a basic model in building Cloud Computing services. The details of virtualization service coverage include Server Consolidation, High Availability, Disaster Recovery or Disaster Management, Infrastructure Optimization, Client Virtualization or Computer Virtualization, Software Lifecycle Management, Secure Computing and Safe Computing[8]. Secure Application / Secure application. Regarding business, there are two virtualization theories where the first is non-IT based / not based on IT and the second is IT based virtualization / virtualization supported by IT. An example of virtualization without IT support is creating sales catalogs and / or billboards on the road. While the examples of virtualization with IT are buying and selling through e-commerce websites / sales networking sites (siring) and distance learning websites / distance learning siring. Research conducted by the author uses virtualization theory with IT support, namely the virtualization process that occurs is triggered through a series of uses of hardware, software, applications and the availability of computer networks[9].

Virtualization Technology Planning

To findings that service planning and virtualization management have not been well explained. It is very important to plan and pay attention to the risks of implementing server virtualization. Furthermore, according to Uddin, seen from several physical servers that are implemented in a traditional Data Center, 30% of these servers have a tendency to absorb energy without any server functions being

utilized (2018: 69) and almost 90% of these servers are idle or not active (2019 to 2020:195). Research conducted on virtualization systems can reduce the number of server requirements. The virtualization system is better than the physical server implementation seen from the availability of IT services. This condition has an impact on the waste of operational costs of a Data Center. On the other hand, virtualization technology is very suitable to be planned and implemented for the purpose of maximizing the capacity of a server so as to save electricity costs, maintenance, computer procurement and Data Center infrastructure in general[10].

Benefits of Virtualization and SMEs Cost Management

The application of virtualization technology provides great benefits for companies, provide seven critical factors that benefit the company, namely system quality, information quality, simple management and maintenance, integrated resources, cost reduction, ease of development, testing and implementation, and organizational consensus. Businesses choose to implement server consolidation services for reasons of reducing unnecessary costs in order to maximize Return on Investment (ROI) in a Data Center environment. For SMEs, Cloud Computing technology is the most suitable choice to benefit their business, and because this is considered to have resulted in a cost effective or cost-effective way through the application of server virtualization. The operational cost components can be categorized into six, namely hardware costs, electricity consumption costs, server procurement costs, server administration costs, virtualization technology software costs, and exclusion costs. To continues information about the adoption of Cloud Computing services with virtualization technology, that the results of a global survey conducted by Executive Programs show that only three percent of CIOs have utilized and benefited from Cloud Computing services, while the rest have not utilized it. This is due to negative issues regarding cloud computing services related to data security, availability of data access, flexibility in application use and migration between providers[11][2].

Server Consolidation Service

Server is the most important resource in a Data Center. Meanwhile, server utilization / utilization is generally very minimal, with a utilization ratio of 5% to 10%, so that the energy consumed remains constant even when the server is idle. This is of course a waste of energy and at this point virtualization technology becomes needed through a mechanism of saving electrical energy and at the same time increasing the productivity of the server itself. The capacity of a physical server device consisting of a processor, memory, and input or output processes will be optimized by implementing an operating system that functions as a Virtual Machine Manager (VMM) or Hypervisor for several Virtual Servers or Virtual Machines (VM) on it. VMs can be formed using the operating system from Microsoft Windows, Linux, or Unix vendors. Every operating system that is virtualized is referred to as a Guest Operating System.

Considering that this research does not refer to a specific operating system, then the Guest Operating System is referred to as a VM. Virtualization technology allows each VM that is on the physical server to share resources[12].

One of the IaaS services related to hardware is a server consolidation service where server consolidation is an efficient approach to the use of server resources which aims to reduce the number of servers needed and at the same time reduce the space required by the server to maximize the benefits of hardware. Meanwhile, one of the techniques of server consolidation services is a server virtualization technique which basically has an architecture that is depicted in Figure 2 below.

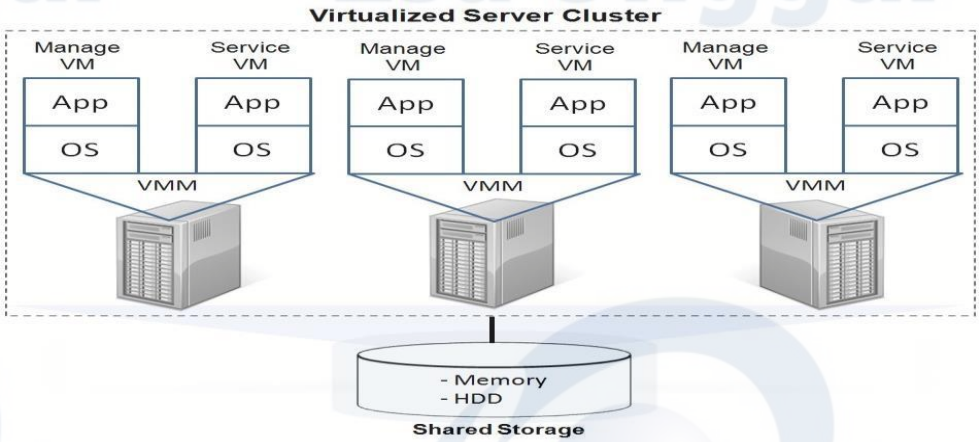

Fig. 2. Server Consolidation Services with Server Virtualization Techniques

Adaptation and Virtualization Technology

The decrease in the number of servers makes the Data Center management space and IT infrastructure management effective. Therefore, the IT staff structure becomes more concise and focuses on their expertise in the field of virtualization technology. In adapting to virtualization technology, training for IT staff is very important and the level of expertise in managing virtualization must always be considered. In previous research, it was stated that virtualization technology can be learned and it is very easy to form an IT staff who is expert in the field of virtualization. This in turn has an impact on reducing the cost of managing IT staff and the cost of implementing IT hardware[13][14].

Framework of Mind

This study wants to prove that there is a significant effect on planning management, adaptability and server consolidation services virtualization technology on operational costs, especially marketing costs for small and medium enterprises. The planning and adaptability of virtualization technology are the main variables in influencing the operational cost effectiveness variable, but this is also influenced by the server consolidation service variable. It is necessary to look at the correlation between variables in the research model using a correlation matrix. To answer the

research hypothesis questions, it is necessary to arrange and classify the variables and sub-variables into the five relationship variables of this study to ensure that these variables are in accordance with the research function[9].

II . METHODS

Research methods

Related with the description of the background of the problems and the theoretical basis, this research provides an overview of the correlation between the independent variables, the mediating variable and the dependent variable as follows. Planning the application of virtualization technology to be the first independent variable will affect the decision to implement virtualization through server consolidation services as a mediating variable and indirectly affect the effectiveness of operational costs as the dependent variable. The independent variable contains two factors that most influence it, namely (1) the number of servers planned and (2) the server capacity to be implemented. The adaptability to virtualization technology as the second independent variable is a very significant factor in influencing the decision to apply virtualization and indirectly affects the effectiveness of operational costs. The authors divide the adaptability factor of virtualization technology into two types of independent sub-variables, namely (1) concern for the cost of implementing virtualization and (2) knowledge and skills in adapting virtualization technology. The authors describe the mediating variables where the decision to apply virtualization technology to server consolidation services will affect the effectiveness of operational costs[5][1].

Research Design

The research is an applied study that uses a descriptive quantitative approach through survey research methods and seeks to prove the initial hypothesis which is called non-experimental hypothesis-testing research where the independent variables are not manipulated by the author. The unit of analysis to be researched is a group / organization where the characteristics of this unit of analysis are company employees who are responsible for and or take part in making decisions on the application of virtualization through server consolidation services. In terms of organizational structure, the employees in question are at the managerial and non-managerial levels with a strata-1 to strata-2 education level. Regarding the knowledge and skills of employees related to research objectives, employees with a diploma-3 education level are the characteristics of the unit of analysis but with the support of the ownership of an International Certification issued by one of the principals of virtualization technology (for example Vmware). Meanwhile, the observation unit that will be targeted is at the level of the IT Manager or Finance Manager, or General Manager, or IT Professionals at the managerial level and the IT Supervisor or IT Staff at the non-

managerial level. Based on the unit of analysis to be studied, this research was conducted using a cross-sectional survey method[15].

Population and Sample

The population in this study are ISPs in Indonesia with SMEs-scale characteristics where the number of employees in the company is not more than 250 people. Due to limited time and energy, this study will take a representative sample of the SMES ISP population in Indonesia based on the potential number of IT workers in a company, the ability of IT workers, the authority of IT workers and the involvement of IT workers in the implementation of server consolidation services. The ISP population obtained from APJII data as of July 25, 2020 is as many as 360 companies in Indonesia and 60% of them are SMEs. The 60% figure was obtained through direct interviews or via telephone since January 2020 and confirmation from APJII. So that the 216 Indonesian SMES ISPs are the population that will be used as the object of research and through the calculation of a 90% confidence level and an error rate of 10.0%, with the minimum sample size is 68 people. In this study, 77 respondents participated.

Method of Analysis

In this study, there are three parts of descriptive statistics. The first part is the analysis result of the respondent's demographics, including education, position in the company. The second part is information about companies, namely ISPs with SMEs level, which are the targets of this research regarding virtualization, including the number of servers consolidated and the number of virtual systems implemented, the time span for virtualization. The last part is the analysis of the research variables which contain the limits of the average value (mean), range, sum, kurtosis and standard deviation of the sample of respondents' answers on each statement item to determine the distribution. This research was conducted by distributing questionnaires as a research instrument to IT officials at companies operating as ISPs at the SMEs level. The analytical method used is quantitative data analysis using two types of statistical tools, namely descriptive statistics and inferential statistics. From the perspective of the variables studied, this study carried out a multivariate analysis using variance-based Structural Equation Modeling (SEM) analysis, namely Partial Least Square (PLS) analysis. Furthermore, testing the validity and reliability, hypotheses, testing the significance of the mediating variables, evaluating measurement models and structural models. The five hypotheses proposed in the study were analyzed using Smart PLS software. PLS-PM analysis is an alternative to covariance-based SEM analysis with several advantages, namely that PLS-PM analysis can be used in smaller samples than SEM covariance (Lisrel), can use instruments whose relationship with latent variables is formative and not too strict in specific distribution assumptions.

The purpose of using PLS-PM is not much different from LISREL (Linear Structural RELations) to analyze the relationship between variables as a whole. PLS-

PM is a variance-based Structural Equation Modeling (SEM) method that aims to examine exploratory relationships between variables. PLS-PM uses a statistical approach for multi-variable modeling between the variables studied and the latent variables. This analysis is a second-stage multivariate generation that combines theory and data which involves latent research variables (constructs) that cannot be measured directly. Whereas the generation of multivariate analysis in the initial stages such as multiple linear regression, discriminant analysis generally involves variables that can be specifically measured directly (observed variable). The stages of analysis in this study are as follows:

1. Establish a structural model and measurement model.
2. Shaping latent variable measurement properties with the instrument (reflective versus formative)
3. Check the correlation level between instruments
4. Estimating the model
5. Evaluating the measurement model, structural model and the suitability of the overall model and
6. Make final conclusions

Method of collecting data

The characteristics of the SMEs population are heterogeneous when viewed from the number of workers. Micro Business / Micro Enterprises have less than 10 workers, Small Business / Small Businesses have less than 50 workers and Medium Business or Medium Businesses have less than 250 workers. However, if the population is concentrated on the ISP, the number of employees is not a determining factor in the choice of sampling technique to be carried out. On the other hand, considering that 60% of the 361 ISP companies in Indonesia are considered to have similar or homogeneous characteristics related to the characteristics of SMEs, this research will be conducted using probability sampling techniques with the type of simple random sampling. Based on the research design, distance and time considerations, the data collection techniques used in this study were a questionnaire either directly or via electronic mail (email).

The results of data collection will be used as primary data[16]. Meanwhile, data obtained from company records, publications by vendors, publications from government parties and reports from various parties related to server virtualization techniques will be used as the basis for research as secondary data. Several questions and statements were addressed to respondents based on the operationalization of research variables. In parallel, the identification of information sources / respondents based on the unit of research analysis was carried out. Considering that the research population is an ISP in Indonesia and ensuring that the data is legal and valid, the initial data source that was extracted was from APJII.

Variables / Dimensions/ Indicator	= n statement
X1 / Server Capacity/ Utilisasi Server	= 3 statement
X1 / Server Capacity/Electricity Resource	= 1 statement
X1 / Number of Server/ System Support	= 3 statement
X1 / Number of Servers/Space Saving	= 1 statement
X2 /P Development & Manageability/Ease of Operations	= 3 statement
X2/P Knowledge & Skills/IT Personnel Performance	= 3 statement
Y/Placement Server Virtualization Implementation/Communication	= 1 statement
Y/Placement Virtualisasi Server/Easy to Learn	= 4 statement
Z/Cost/ Decreased Costs	= 3 statement
Z / Impact to Company/ IT Security	= 1 statement
Z / Impact to Company /IT Service	= 3 statement

Fig. 3. Instrument Summary

The author contacted the ISP from official list to get representative and competent respondents regarding the research objectives. From the hypothesis that has been presented, each instrument relation in the form of variables can be formed in a research instrument which is arranged into several closed statements. The number of instruments was 26 statements based on the relationship between the four variables. Measurement of the instrument uses a Likert scale with a scale of 1-4, where 1 is strongly disagree, 2 is disagree, 3 is agree, and 4 is strongly agree. The following is a summary of the number of instruments based on each variable, its dimensions and indicators in Figure 3. To help obtain respondent information and simultaneously filter respondents who filled out a questionnaire, this study needs to provide some screening questions. Then the screening questions will be processed and analyzed into a descriptive research report. The screening questions in this study were divided into two parts, namely the company profile with six questions and the respondent profile with 4 questions.

III. RESULT AND DISCUSSION

Results of Data Processing

Demographic data of respondents consist of gender, age, education, position and work experience[17]. From the results of data processing, it was found that most respondents were male (92%), most respondents were 25 to 44 years old (85%), most education was Strata2 (83%) and most positions were IT Manager (81%). The work experience of respondents is a picture of the profile of the Indonesian SMES ISPs for the most 1-2 years (58%), then the conditions for implementing the most Indonesian SMEs ISP virtualization are at the level of implementation, management and supervision (55%), the most duration of application is 1-2 years (49 %) with an average Indonesian SMES ISP having 10-50 IT employees (60%).

Descriptive statistics

Descriptive statistics are useful for knowing the distribution of respondents' responses to whether they strongly disagree, disagree, agree or strongly agree. The mean and standard deviation measures were used to assess descriptive statistics of respondent's responses. The following are the results of data processing with SPSS. A total of 26 statements from four variables resulted in an average mean of 3.4657 and a standard deviation of 0.5517.

variables	mean	std deviation
virtualization technology planning	3.4708	0.4823
virtualization technology adaptability	3.4827	0.6203
server consolidation service	3.4805	0.5067
operational cost effectiveness	3.4286	0.5974
average	3.4657	0.5517

Fig. 4. Descriptive Statistics

Partial Least Square Path Modeling

There are four steps in the analysis of partial least square path modeling, namely checking the correlation between instruments, evaluating the measurement model (outer model), evaluating the structural model (inner model) and testing the whole model (goodness of fit model). This examination is carried out systematically and gradually in order to obtain unbiased model test results and the results of the analysis can be interpreted correctly. The inter-instrument correlation check evaluates whether any instruments between exogenous variables have a very high correlation[18]. Rule of thumb in a correlation value above 0.80 indicates a high correlation between instruments. At the initial stage, the Q1 instrument should be eliminated considering the high correlation to the Q11 instrument of 0.817 and Q12 of 0.852.

Evaluation of Measurement Model (Outer Model)

The outer model shows the relationship between each research variable and the instruments that reflect it. The term validity is used to see and test how valid each instrument is able to reflect the research variables. In the initial validity test, there are two instruments, namely Q2 and Q6, which have a Loading Factor (LF) value of less than 0.50, so the two instruments are excluded from the research model that measures virtualization technology planning variables.

Testing the Influence of Mediation Variables

This study involves a mediating variable, namely server consolidation service (Y), which mediates the effect of the virtualization technology planning variable on the operational cost effectiveness variable and the virtualization technology adaptability variable on the operational cost effectiveness variable. Testing of the mediating variables, following are the results of Smart PLS processing:

Causal Relationships	Path coefficient
Planning -> Services	0.1347
Service ---> Effectiveness	0.4761
Planning -> Services ---> Effectiveness	0.0641
Ability -> Service	0.7801
Service ---> Effectiveness	0.4761
Capability -> Service ---> Effectiveness	0.3714

Fig. 5. Coefficient of Mediation Variable Pathways

Validity and Reliability (Early Stage)

In this initial stage, the Average Variance Extracted (AVE) value for the virtualization technology planning variable is the lowest (0.3781) less than 0.40 even though it has a high composite reliability value (0.7924). This can be due to the existence of two measurement instruments for virtualization technology planning variables, namely Q2 and Q6 which are low less than 0.50. Furthermore, AVE for the variable virtualization adaptability and server consolidation services is more than 0.40 and even more than the expected value, namely 0.50. This shows that the content of the variance or diversity of information contained in the instrument can be highly contained by the variables. While the AVE of the effectiveness variable was 0.4573, which was still above 0.40 even though this value was less than 0.50. Referring to the AVE value above 0.40 is still acceptable if the composite reliability value is very high so that it still reflects the goodness of the measurement model (good convergent validity).

Validity and Reliability (Second Stage)

The second stage of estimation is an estimate that is carried out without including invalid instruments in the initial stages, namely Q2, Q6 and Q11. The results of data processing prove that all validated LF values are above 0.50 for all instruments on the four variables, as well as the significance of / T. The validated statistic is above 1.96 and the validated AVE is equal to or above 0.50 for all variables. At this stage it is called the Structural Model Evaluation (Inner Model), which is to test the influence hypothesis between the variables that have been proposed in the study. Inner model evaluation is to look at the T statistical value. Rule of thumb T statistic above 1.96 (with $\alpha = 5$) via bootstrapping * 200 shows that there is a significant effect. The following is a summary of the results of Smart PLS processing. From these results, it is illustrated that the first to fifth hypotheses indicate a positive correlation between variables with the results of rejecting H0 and accepting H1.

H1: variable path coefficient PTV	LKS = 0.1347	T Stat = 2.3828
H2: variable path coefficient PTV	EBO = 0.3257	T Stat = 6.9642
H3: variable path coefficient KATV	LKS + 0.7801	T Stat = 16.1605
H4: variable path coefficient KATV	EBO = 0.2776	T Stat = 4.0491

H5: variable path coefficient LKS	EBO – 0.4761	T Stat = 7.5296

Fig. 6. Hypothesis test

Total Effect Testing

The total effect is the sum of the path coefficients between the direct effect and the mediating effect. The following are the results of Smart PLS processing:

Causal Relationship	Direct Impact	Indirect Impact Through the Service	Total Effect
Planning-> Effectiveness	0.3257	0.0641	0.3898
Ability -> Effectiveness	0.2776	0.3714	0.6490
Service -> Effectiveness	0.4761	-	0.4761

Fig. 7. Total Effect

Model Goodness Testing

The Goodness of Fit (GoF) model shows the goodness of the overall model. The value of R square in the range of 0.3 to 0.7 (Chin et al, 2010: 14) states the magnitude of the influence of exogenous variables, namely virtualization technology planning (X1), virtualization technology adaptability (X2) and server consolidation services (Y) on endogenous variable, namely operational cost effectiveness (Z). Following are the results of Smart PLS processing:

Causal Relationship	R Square
(Planning and Capability) ⓪ Service	0.7076
(Planning, Capabilities and Services) ⓪ Effectiveness	0.8343

GoF in PLS-PM is to evaluate the measurement model (outer model) and structural model (inner model) as a whole. The GoF index is calculated from the root mean of the multiplication between the R square value and the communality. The results of the calculation are as follows.

Variable	R Square	Communality
Effectiveness	0.8343	0.4568
Ability	-	0.7614
Service	0.7076	0.5702
Planning	-	0.5009
Average	0.7710	0.5724
GoF Index		0.6643

Fig. 8, Goodness of Fit Index

Research Results

The final results of measurement data processing (Outer Model) and structural data processing (Inner Model), of empirical evidence in this study provides a clue that most Indonesian SMEs ISPs have an understanding of the importance of virtualization technology planning, virtualization technology adaptability and server consolidation

services in creating operational cost effectiveness in managing a data center. This section will discuss the research variables and evaluation of the research model design that has been described and then linked to the theory and conditions in the field[12].

IV. CONCLUSION

From the study results it can be concluded that Indonesian SMEs ISPs consider virtualization technology to be not just a trend in the current era, but it is a business requirement in the internet service industry (ISP) where Indonesian SMEs ISPs are proven to have followed current technological developments, namely Cloud Computing with the application of technology. 77 respondents representing 77 Indonesian SMEs ISPs have participated in this study. There are three companies that still rely on traditional Data Center management, while the remaining 74 SMEs ISPs in Indonesia have managed healthcare Data Centers by utilizing virtualization technology through IaaS services in general and dedicated server consolidation services. So this is evident in line with the research results that Indonesian SMEs ISPs prefer to use virtualization technology over traditional data center management for the purpose of increasing operational cost effectiveness. virtualization through server consolidation services to support its business. Indonesian SMEs ISPs have realized the positive implications of using Cloud Computing through the application of virtualization technology, namely increasing Data Center security, accurate measurement of resources in the Data Center, resource efficiency in the Data Center environment to increasing the effectiveness of Data Center operational costs. Indonesian SMEs ISP considers the adaptability factor of virtualization technology to be the most important thing in the effort to build server consolidation services through the application of server virtualization techniques. IT personnel performance indicators are of the utmost importance for Indonesian SMEs ISPs in achieving successful implementation of server consolidation services and efforts to increase operational cost effectiveness. It is evident that the response to statement items on the adaptability variable of virtualization technology and the influence of these factors on server consolidation services and operational cost effectiveness is very significant. One of the things stated most important in the adaptability of virtualization technology by IT managers in managing the Data Center is the impact of the effectiveness of job completion after the application of virtualization technology.

Meanwhile, faster work completion is the second most important factor. ISP or UKM Indonesia gave a significant response to the effect of virtualization technology planning on the successful implementation of server consolidation services to increase operational cost effectiveness in the Data Center. Indonesian SMEs ISPs consider the use of virtualization technology in the Data Center to be very important so that server resources can be maximally utilized which has an impact on reducing the cost of electricity consumption and managing the server itself. The second most important factor when it comes to virtualization technology

planning is that a server whose utilization rate is above 90% will reduce the cost of operating the Data Center. Thus, virtualization technology planning can serve as a basic reference for Indonesian SMEs ISPs before implementing server consolidation services. The research results, the application of virtualization technology, especially server consolidation services at the Data Center, is proven to significantly affect the effectiveness of operational costs compared to the traditional application of Data Center. The application of virtualization technology requires IT personnel who have special knowledge and special skills in planning, implementing, managing and evaluating virtualization technology.

Suggesstions

This study proposes a model or research design aimed at SMSs ISPs in Indonesia healthcare industry in implementing server consolidation services at a data center. Research suggesstions the best practice of data center management, expected that Indonesian SMES ISPs can make "virtualization technology adaptability" as a strategy in implementing server consolidation services to increase operational cost effectiveness in marketing, adapt management to new normal situations and manage data centers. Suggestions from this research are expected that Indonesian SMEs ISPs need to pay attention to the need for the adaptability of this virtualization technology by doing the following for preparing new normal and during pandemic such as measuring, evaluating and documenting the productivity of IT personnel on server consolidation services at the Data Center, the quality of the results of server consolidation service management at the Data Center and creating a priority scale of work and consistency of scheduling in managing resources in a data center. In building a server consolidation service in a Data Center with the aim of improving management adaptation, operational cost effectiveness and marketing, Indonesian SMEs ISPs should use virtualization technology planning as a basic reference for implementing server consolidation services through the following steps:

1. Observe server utilization measurements, document and evaluate measurements.
2. Observe the calculation of the ratio of consumption of electricity resources, carry out documentation and carry out evaluation.
3. Observe, measure, document and evaluate the reliability of systems at the Data Center for the availability of IT services.
4. Observing the space saving in the Data Center, this includes managing resources such as lighting and at the same time setting room temperature in the Data Center.
5. In managing a Data Center through server consolidation services with the aim of increasing operational cost effectiveness, Indonesian SMES ISPs are expected to carry out the following: send IT personnel to training agencies that already have experts or experts in the field of Data Center management, build

harmonious communication in a work team and collaborative to increase the effectiveness of operational costs in the Data Center and evaluating IT personnel through a certification process, especially those related to virtualization technology at the Data Center.

As an effort to manage a good Data Center through server consolidation services, it is hoped that Indonesian SMEs ISPs will observe and implement the need for good and scalable data center service governance by taking the best practice steps. Indonesian SMEs ISPs that have limited IT resources are expected to take into account their adaptability in implementing virtualization technology. This should be observed earlier and can be used as a strategy to increase operational cost effectiveness. Therefore it is necessary to manage a Data Center using virtualization technology through server consolidation services, as it is proven to increase the effectiveness of operational costs. Regarding the existing research limitations, it is hoped that this research can be continued with more in-depth topics as follows: analysis of the key factors for the successful application of Cloud Computing related to the adaptability of virtualization technology, bakuan virtualization technology planning in a data center, research on other virtualization technology services, research virtualization technology on target companies in the non-ISP industry.

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